



Sheet 1 of 2

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
MATERIAL INFORMATION STATEMENT
(Use several sheets if necessary)ATTY. DOCKET NO.
MIT5981/6124SERIAL NO.
07/983,387APPLICANT
Ramnath Sesisekheran, et al.FILING DATE
November 30, 1992GROUP
1808

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	IF APPROPRIATE	FILING DATE
dkw	AA	4,373,023	02-08-83	Langer, et al.		435	02	
	AB	4,338,401		Cremonesi				
	AC	4,795,703		Folkman, et al.				
	AD	4,885,207		Johnson, et al.				
dkw	AE	4,341,869	07-27-83	Langer, et al.		435	232	
	AF	4,373,023		Langer, et al.				
	AG	4,847,338		Linhardt, et al.				
	AH	4,401,758		Lormeau, et al.				
	AI	5,019,724		Petitou, et al.				
	AJ							
	AK							

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AL	3108486		Japan				
	AM							
	AN							
	AO							
	AP							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR	Lindhardt, R. J., Chem. Ind. 2, 45-50 (1991)
	AS	Casu, B., Adv. Carbohydr. Chem. Biochem. 43, 51-134 (1985)
	AT	Lindhardt, R. J., et al., Biol. Chem. 267, 2380-2387 (1992)

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Delonh K. Kurose

DATE CONSIDERED

03-04-94

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FORM PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. MIT5981/6124		SERIAL NO. 07/983,367	
MATERIAL INFORMATION STATEMENT (Use several sheets if necessary)				APPLICANT Ramnath Sesisekharan, et al.			
				FILING DATE November 30, 1992		GROUP 1808	
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AR		Lindahl, U., et al., <i>Trends Biochem. Sci.</i> 11, 221-225 (1986)				
	AS		Lindahl, U., et al., <i>J. Biol. Chem.</i> 255, 5094-5100 (1980)				
	AT		Lindahl, U., and Kiellen, L., <i>The Biology of Extracellular Matrix Proteoglycans</i> (Wight, T.N., and Mecham R., eds) pp. 59-104. Academic Press, New York				
	AR		Linhardt, R.J., et al., <i>Biochem. J.</i> 254, 781-787 (1988)				
	AS		Linhardt, R.J., et al., <i>Biochemistry</i> 29, 2611-2617 (1990)				
	AT		Linhardt, R.J., et al., <i>Biol. Chem.</i> 267, 2380-2387 (1992)				
	AR		Linhardt, et al., <i>Biochem. J.</i> 254, 781-787 (1988)				
	AS		Loganathan, D., et al., <i>Biochemistry</i> 29, 4362-4368 (1990)				
	AT		Linhardt, R.J., et al., <i>Appl. Biochem. Biotech.</i> 12, 135-176 (1986)				
	AR		Linker, A., and Hoyvingh, P., <i>J. Biol. Chem.</i> 240, 3724-3728 (1965)				
Handwritten mark	AS		Hoyvingh, P. and Linker, A., "The Enzymatic Degradation of Heparin and Heparitin Sulfate," <i>J. Biol. Chem.</i> 245, 6170-6175 (1970)				
	AT		Dietrich, G.P., et al., <i>J. Biol. Chem.</i> 248, 6408-6415				
	AR		Silva, M.E., et al., <i>Biochem. Biophys. Acta</i> 437, 129-141 (1978)				
Handwritten mark	AS		Yang, V.C., et al., "Purification and Characterization of Heparinase from <i>Flavobacterium heparinum</i> ," <i>J. Biol. Chem.</i> 260, 1849-1857 (February 1985)				
	AT		Gallagher, P.M., et al., <i>Eur. J. Appl. Microbiol. Biotechnol.</i> 15, 252-257 (1982)				
EXAMINER			Date			DATE CONSIDERED	
			Selvakumar			03-04-94	
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FORM PT

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07/983,367

MATERIAL INFORMATION STATEMENT

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APPLICANT

Ramnath Seaisekheran, et al.

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1808

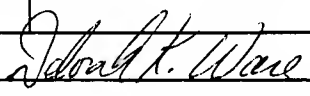
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	Rice, K.G., and Linhardt, R.J., <i>Carbohydr. Res.</i> 190, 219-233 (1989)
AS	Saviers, A.A., et al., <i>Appl. Environ. Microbiol.</i> 33, 319-322 (1977)
AT	Nakamura, T., et al., "Purification and Properties of Bacteroides Heparinolyticus Heparinase (Heparin Lyase) EC 4.2.2.7," <i>J. Clin. Microbiol.</i> 26, 1070-1071 (1988)
AR	Bohmer, L.H., et al., <i>J. Biol. Chem.</i> 265, 13609-13617 (1990)
AS	Yoshida, K., et al., <i>Annual Symposium of Glycoconjugates</i> (1989)
AT	Dietrich, C.P., <i>Biochem. Biophys. Res. Commun.</i> 56, 965-972 (1974)
AR	Michelacci, Y.M., and Dietrich, C.P., <i>Biochem. Biophys. Res. Commun.</i> 56, 973-980 (1974)
AS	Ototani, N., and Yosizawa, Z., <i>J. Biochem. (Tokyo)</i> 84, 1005-1008 (1978)
AT	Ototani, N., and Yosizawa, Z., <i>Carbohydr. Res.</i> 70, 299-306 (1979)
AR	Ototani, N., et al., "Purification of Heparinase and Heparitinase by Affinity Chromatography on Glycosaminoglycan-Bound AH-Sepharose 4B," <i>Carbohydr. Res.</i> 88, 291-303 (1981)
AS	Ototani, N., and Yosizawa, Z., <i>Proceedings of the 6th International Symposium on Glycoconjugates</i> , pp. 411-412, September 20-25, Tokyo, Japen Scientific Press, Tokyo
AT	Dietrich, C.P., and Nader, H.B., <i>Biochem. Biophys. Acta</i> 343, 34-44 (1974)
AR	Dietrich, C.P., et al., <i>Biochem. Biophys. Acta</i> 237, 430-441 (1971)
AS	Nader, H.B., et al., <i>J. Biol. Chem.</i> 265, 16807-16813 (1990)
AT	Moffatt, C.F., et al., <i>Eur. J. Biochem.</i> 197, 449-459 (1991)

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<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>MAIL ROOM</p> <p>NOV 12 1993</p> <p>PT. & TRADEMARKS</p> </div> <div> <p>U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE</p> <p>MATERIAL INFORMATION STATEMENT</p> <p><small>(Use several sheets if necessary)</small></p> </div> </div>		<p>Sheet <u>4</u> of <u>9</u></p>	
<p>FORM PTO-1549</p>		<p>ATTY. DOCKET NO. MIT5981/6124</p> <p>APPLICANT Ramneth Saeisekharan, et al.</p> <p>FILING DATE November 30, 1992</p>	
		<p>SERIAL NO. 07/983,367</p> <p>GROUP 1808</p>	
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)			
AR		McLean, M.W., et al., <i>Proceedings of the 8th International Symposium on Glycoconjugates</i> , pp. 73-74, September, Houston, Peeger Publishers, New York (1975)	
AS		McLean, M.W., et al., <i>Eur. J. Biochem.</i> 145, 607-615 (1984)	
AT		Linhardt, et al., "An Immobilized Microbial Heparinase for Blood Deheparinization," <i>Appl. Biochem. Biotech.</i> 9, 41-55 (1984)	
AR		Yang, V.C., et al., <i>Appl. Biochem. Biotech.</i> 18, 35-50 (1987)	
AS		Yoshida, K., <i>International Symposium on Heparin and Related Polysaccharides</i> , September 1-6, 1991 Uppsala, Sweden	
AT		Kanwar, Y.S. and Farguher, M.G., (1979)	
AR		Linhardt, R.J., et al., <i>Proc. Natl. Acad. Sci. USA</i> 76, 1303-1307 (1979)	
AS		Linhardt, R.J., et al., <i>Biochem. J.</i> 254, 781-787 (1988)	
AT		Marchant, Z.M., et al., <i>Biochem. J.</i> 229, 369-377 (1986)	
AR		Turnbull, J.E., and Gallagher, J.L., <i>Biochem. J.</i> 251, 597-608 (1988)	
AS		Linhardt, R.J., et al., <i>J. Biol. Chem.</i> 257, 7310-7313 (1982)	
AT		C.G. Gebelein (Ed.), <i>Biomimetic Polymers</i> (pp. 135-173), New York: Plenum Press	
AR		Sharath, M.D., et al., <i>Immunopharmacology</i> 9, 73-80 (1985)	
AS		Rice, K.G., and Linhardt, R.J., <i>Carbohydr. Res.</i> 190, 219-233 (1989)	
AT		Bradford, M.M., <i>Anal. Biochem.</i> 72, 248-254 (1976)	
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Ramnath Sasisakheran, et al.

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OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AR	Payza, A.N., and Korn, E.D., <i>Nature</i> 177, 88-89 (1956)
	AS	Zimmermann, J.J., et al., <i>Appl. Biochem. Biotech.</i> 30, 137-148 (1991)
dkw	AT	Galliber, P.M., et al., "Heparinase Production by <i>Flavobacterium Heparinum</i>," <i>Appl. Environ. Microbiol.</i> 41, 360-365 (1981)
	AR	Pavim, S., and Chalkley, H., <i>Arch. Biochem. Biophys.</i> 130, 337-348 (1969)
	AS	Lauer, H.H., and McManigill, D., <i>Anal. Chem.</i> 58, 186-170 (1986)
	AT	Sasisakheran, R., Ph.D. thesis, Cloning and Biochemical Characterization of Heparinase from <i>Flavobacterium heparinum</i>, Harvard University (1991)
	AR	Cohen D. M., and Linhardt, R.J., <i>Biopolymers</i> 30, 733-741 (1990)
	AS	Warnick, C.T., and Linker, A., <i>Biochemistry</i> 11, 568-572 (1972)
	AT	McLean, M.W., et al., <i>Eur. J. Biochem.</i> 145, 607-615 (1984)
	AR	Al-Hakim, A., and Linhardt, R.J., <i>Electrophoresis</i> 11, 23-28 (1990)
dkw	AS	Deutscher, M.P. (ed.) "Guide to Protein Purification," <i>Methods in Enzymology</i> 182, 603-613, 738-751
dkw	AT	Berger, S., et al., "Guide to Molecular Cloning Techniques," <i>Methods in Enzymology</i> 152, 393-399, 415-423, 432-447 (1987)
dkw	AR	Cerbelsaud, E.C., et al., "Sulfur Regulation of Heparinase and Sulfatases in <i>Flavobacterium heparinum</i>," <i>Appl. Environ. Microbiol.</i> 51, 640-646 (March 1986)
dkw	AS	Belvavsky, A., et al., "PCR-based cDNA library construction: general cDNA libraries at the level of a few cells," 17, 2919-2932 (April 1989)
dkw	AT	Yoshizawa, et al., A 79,107,59; (Japan) 23 August 1973 CA91:209379d

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Deborah K. Wale

DATE CONSIDERED

03-04-94

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AR	Bernstein, H., "A System for Heparin Removal," Ph.D. Dissertation, Massachusetts Institute of Technology (1985)
AS	Cham, S.E., et al., "Scale-Up of Protein Isolation," W. B. Jakoby, ed., <i>Methods in Enzymology</i> 22, 478-490 (Academic Press, New York 1971)
AT	Comfort, A.R., et al., "The Influence of Bond Chemistry on Immobilized Enzyme Systems for Ex Vivo Use," <i>Biotechnology and Bioengineering</i> 32, 554-563 (August 1988)
AR	Klein, M.D., et al., "Heparinase: In Vivo Activity and Immunogenicity in Rabbits," <i>J. Lab. Clin. Med.</i> 102(5), 828-837 (November 1983)
AS	Langer, R., et al., "An Enzymatic System for Removing Heparin in Extracorporeal Therapy," <i>Science</i> 217, 261-263 (July 1982)
AT	Langer, R., et al., "In Vivo Activity of Microbial Heparinase," <i>Trans Am. Soc. Artif. Intern. Organs</i> 28, 387-390 (1982)
AR	Linhardt, R.J., et al., "Immuno-Affinity Purification of Heparinase," <i>Int. J. Biochem.</i> 17(11), 1179-1183 (1985)
AS	Linker, A., et al., "Heparinase and Heparitinase from Flavobacteria," V. Ginsburg, ed., <i>Methods in Enzymology</i> 28, 902-911 (Academic Press, New York 1972)
AT	Pitney, W.R., et al., "Control of Heparin Therapy," <i>British Medical Journal</i> 4, 139-141 (October 1970)
AR	Silva, M.E., et al., "Isolation and Partial Characterization of Three Induced Enzymes from <i>Flavobacterium heparinum</i> Involved in the Degradation of Heparin and Heparitin Sulfates," <i>Biochemical and Biophysical Research Communications</i> 56(4) 965-972 (1974)
AS	Yang, V., et al., "Removal of the Anticoagulant Activities of the Low Molecular Weight Heparin Fractions and Fragments with Flavobacterial Heparinase," <i>Thrombosis Research</i> 44(5), 599-610
AT	Stecher, et al., Ed., <i>The Merck Index, Eighth Ed.</i> , 879 (1968)
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EXAMINER <i>Dorothy K. Wase</i>	DATE CONSIDERED <i>03-03-94</i>
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